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EXAMINER

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ART UNIT PAPER NUMBER

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 121703

Application Number: 09/885,102  
Filing Date: June 21, 2001  
Appellant(s): SHINJO ET AL.

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Douglas Hahn  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed on November 24, 2003.

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**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

Appellant's brief includes a statement that claims 13 and 19 do not stand or fall together.

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

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**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

1. Claims 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Shinjo et al. (US Pat. 5,538,695).

Shinjo teaches an ozonizer 2 and an electric discharge cell 4 for the ozonizer, the electric discharge cell comprising a pair of electrodes 5 & 6 spaced apart from each other; wherein the electrodes are connected to a power source 10 and electrode 6 has a surface including a plurality of trench grooves (serration-shaped projections); a dielectric plate 7 disposed between the electrodes; and a gas flow path or discharge space 8 between the dielectric and electrode 6 (see Figs. 1-2; col. 3, ln. 8-17; col. 5, ln. 37-56). Shinjo further teaches the trench grooves being substantially parallel with each other (see Fig. 2).

Although Shinjo is silent with respect to an inlet port and an outlet port, an inlet port and an outlet port would be inherently included in the apparatus, in order to flow the gas through the gas flow space.

Shinjo further teaches electrode 5 having a flat surface with the dielectric on the surface (see Fig. 2).

2. Claims 13-14, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kamiya et al. (US Pat. 5,549,874).

Kamiya teaches an ozone generator, comprising a pair of electrodes 3 & 4 connected to a power supply 7; a dielectric 2 between the two electrodes; wherein electrode 4 has a plurality of

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parallel, trench grooves on the surface; and a discharge space or gas flow passage 1 between electrode 4 and the dielectric; electrode 3 having a flat surface and covered by the dielectric 2 (see Fig. 4; col. 1, ln. 41-54).

Although Kamiya is silent with respect to an inlet port and an outlet port, an inlet port and an outlet port would be inherently included in the apparatus, in order to flow the gas through the gas flow space.

In regards to claim 18, Kamiya further teaches the dielectric comprising sapphire (see abstract).

3. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Duarte (US pat. 5,554,344).

Duarte teaches an ozone generator, comprising a gas inlet, gas outlet; a pair of electrodes 4 & 5, spaced apart and connected to an electric power source, with a dielectric 3 disposed between the electrodes; a gas path 8 between the dielectric and one or both electrodes; wherein the electrode surfaces have a plurality of grooves that are substantially parallel to each other (see Figs. 1-2; col. 3, ln. 37 to col. 4, ln. 10).

4. Claims 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Document (JP-2540627).

JP '627 teaches an ozonizer, comprising a pair of electrodes 2 & 3, spaced apart from each other and connected to an electric power source by electrical leads 10 & 11, with a dielectric 1 between the electrodes; a gas path between the dielectric 1 and electrode 2; wherein electrode 2 has a plurality of parallel trench grooves on its surface, and electrode 3 has a flat surface and is covered by the dielectric (see Figs. 1-2).

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Although JP '627 is silent with respect to an inlet port and an outlet port, an inlet port and an outlet port would be inherently included in the apparatus, in order to flow the gas through the gas flow space.

***Claim Rejections - 35 USC § 103***

5. Claims 17, 19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinjo as applied to claim 13 above.

Shinjo is as set forth in claim 13 above and incorporated herein.

In regards to claim 17, Shinjo does not teach the ozonizer comprising a plurality of the electric dischargers. However, it has been held within the skill in the art that duplication of parts has no patentable significance unless a new and unexpected result is produced. See ***MPEP 2144, Section VIB.***

In regards to claim 19, Shinjo does not teach a specific shape of the electrode surfaces. However, it has been held within the skill in the art that particular configurations of the electrode surfaces would be a matter of choice, since it appears that the discharger would function equally well whether the electrode surfaces are circular or of some other shape, absent persuasive evidence. Furthermore, Applicants do not disclose that the use of circular electrode surfaces would provide more advantages over other configurations of the electrode surfaces. See ***MPEP 2144.04, Section IVB.***

In regards to claim 21, it has been held within the skill in the art that apparatus claims must be structurally distinguishable from the prior art and that the manner of operating the device does not differentiate apparatus claims from the prior art. See ***MPEP 2114.***

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6. Claims 17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya as applied to claim 13 above.

Kamiya is as set forth in claim 13 above and incorporated herein.

In regards to claim 17, Kamiya does not teach the ozonizer comprising a plurality of the electric dischargers. However, it has been held within the skill in the art that duplication of parts has no patentable significance unless a new and unexpected result is produced. See *MPEP 2144, Section VIB*.

In regards to claim 19, Kamiya does not teach the electrode surfaces being circular in form. However, it has been held within the skill in the art that particular configurations of the electrode surfaces would be a matter of choice, since it appears that the discharger would function equally well whether the electrode surfaces are circular or of some other shape, absent persuasive evidence. Furthermore, Applicants do not disclose that the use of circular electrode surfaces would provide more advantages over other configurations of the electrode surfaces. See *MPEP 2144.04, Section IVB*.

In regards to claim 20, Kamiya teaches the dielectric comprising sapphire (see abstract).

In regards to claim 21, it has been held within the skill in the art that apparatus claims must be structurally distinguishable from the prior art and that the manner of operating the device does not differentiate apparatus claims from the prior art. See *MPEP 2114*.

7. Claims 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinjo and JP '627 as applied to claims 13 and 19 above, and further in view of Ishioka et al. (US Pat. 6,027,700).

Shinjo and JP '627 are as set forth in claims 13 and 19 above and incorporated herein.

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Shinjo teaches both electrodes being supported by a retaining frame 11 and spacers 12, and that the cooling passage traverses both electrodes (see Fig. 2). However, Shinjo does not teach the cooling passage flow through a holding plate supporting the electrodes.

JP '627 teaches both electrodes being supported by presser frame 9 and packing 8. The flat electrode 3 is further directly supported by a holding plate (water cooled case 6), wherein cooling water traverses the holding plate (see Fig. 1). However, JP '627 does not teach the cooling passage traverses through one of the other electrode.

Ishioka teaches an ozonizer, comprising ground and high voltage electrodes 102 & 104 spaced apart from each other with a dielectric in between; the electrodes being supported by the housing 101 and capillaries 111; wherein cooling water traverses both the high voltage electrode and the support housing (see Figs. 4A-B).

Therefore, it would have been obvious to one of ordinary skill in art, at the time the invention was made, to have modified the cooling passage of Shinjo and JP '627 with the one taught by Ishioka. This is because it has been known within the skill in the art that in an ozone generator cooling both of the electrodes, and especially the high voltage electrode, would prolong the electrodes' lifetime. And this cooling would also enhance the production of ozone, since it has been known that ozone decomposes faster at higher temperatures.

#### **(11) Response to Argument**

In response to Applicants' remark that none of the references of Shinjo, Kamiya, Duarte, JP '627 teaches the ozone generators with a gas flow passage that is arranged so that the gas flow between the electrodes in a direction transverse to a longitudinal direction of the parallel grooves. However, it has been within the skill in the art that the manner of operation or



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functional limitations would have insignificant patentable weight when an apparatus claim is being considered. See *MPEP 2114*.

Moreover, in the reference of Shinjo, Fig. 6 is the same as Fig. 11 in the instant application, which illustrates that the gas flows in a direction parallel with or in a longitudinal direction of the grooves.

With respect to the reference of Duarte, Applicants allege that Duarte teaches the electrodes etched with a spiral spiked pattern, not a plurality of parallel grooves formed on a surface thereof. However, Duarte teaches the electrodes whose surfaces are etched with multi spiral spiked patterns and equal number of spirals are etched in opposite directions forming sharp spiked peaks (see col. 4, ln. 6-15) and as shown in Fig. 2, the grooves are in parallel with each other.

Applicants further contend that neither Shinjo nor Kamiya teaches an inlet port and an outlet port. This contention is correct. However, since Shinjo and Kamiya each teaches a gas flow through a gap between the two electrodes, a gas inlet and a gas outlet would be inherently present for flowing the gas through the gap.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in art, at the time the invention

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was made, to have modified the cooling passage of Shinjo and JP '627 with the one taught by Ishioka. This is because it has been known within the skill in the art that in an ozone generator cooling both of the electrodes, and especially the high voltage electrode, would prolong the electrodes' lifetime. This cooling would also enhance the production of ozone, since it has been known that ozone, whose lifetime is short, decomposes even faster at higher temperatures.

In response to applicants' argument that none of the references teaches one of the electrodes having a plurality of concentric circular grooves formed on a disc-shaped surface thereof. This is correct. However, it has been within the skill in the art that configuration of the electrode would have been an obvious matter of designed choice absent persuasive evidence, and would not be sufficient to patentably distinguish over the prior art. Moreover, Applicants have not disclosed the advantages of this electrode configuration over other configurations.

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,

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December 18, 2003

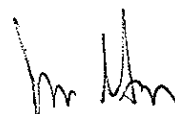
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